Infinova®

V5411-A8 SERIES

INDOOR ELECTRONIC DAY/NIGHT MINIDOME FIXED CAMERA

User Manual

CONTENTS

1. DESCRIPTION 1
2. MAIN FEATURES 3
3. INSTALLATION 4
3.1 MOUNTING PROCESS 4
3.2 HANDLING PRECAUTIONS 7
3.3 INSTALLATION PRECAUTIONS 7
4. MENU SETTINGS 8
4.1 LENS 12
4.2 SHUTTER/AGC 13
4.3 PICTURE ADJUSTMENT 15
4.3.1 MIRROR 15
4.3.2 BRIGHTNESS 15
4.3.3 CONTRAST 16
4.3.4 SHAPRNESS 16
4.3.5 HUE 16
4.3.6 GAIN 16
4.4 WHITE BALANCE 17
4.5 NR 19
4.6 CAMERA ID 19
4.7 LANGUAGE 20
4.8 BACKLIGHT 21
4.9 MOTION DETECTION 21
4.10 PRIVACY MASK 22
4.11 ATR 23
4.12 SYNC MODE 23
4.13 DAY/NIGHT 23
4.14 CAMERA RESET 24
APPENDIX I SPECIFICATIONS 25
APPENDIX II CABLE DIAMETER CALCULATION AND LIGHTNING & SURGE PROTECTION 27

1. DESCRIPTION

Thank you very much for purchasing our product.

Infinova's V5411-A8 series indoor electronic day/night fixed minidome cameras feature a high resolution 1/3" SONY Exview HAD II CCD sensor. Advanced Effio Digital Signal Processing (DSP) provides 700 TV lines of resolution, excellent low light performance, and superior color rendering ability and digital noise reduction function, which ensures high-quality images even under challenging lighting environments.

V5411-A8 series provides privacy mask which effectively protects certain private areas from being seen and motion detection which provides higher security for your surveillance.

V5411-A8 series offers user-friendly OSD menu, easy to adjust the video parameters. In addition, its elegant design and compact structure makes it an ideal surveillance solution for shopping malls, banks, office buildings, parking lots, city streets and other applications.

This manual is for the following models:

V5411-A8004ST	Analog minidome camera, 2-axis, Indoor, 1/3 inch CCD, Electronic day/night, 700TVL, NTSC, 12VDC/24VAC, Surface mount, 2.8mm fixed lens
V5411-A8014ST	Analog minidome camera, 2-axis, Indoor, 1/3 inch CCD, Electronic day/night, 700TVL, PAL, 12VDC/24VAC, Surface mount, 2.8mm fixed lens
V5411-A8004SU	Analog minidome camera, 2-axis, Indoor, 1/3 inch CCD, Electronic day/night, 700TVL, NTSC, 12VDC/24VAC, Surface mount, 3.6mm fixed lens
V5411-A8014SU	Analog minidome camera, 2-axis, Indoor, 1/3 inch CCD, Electronic day/night, 700TVL, PAL, 12VDC/24VAC, Surface mount, 3.6mm fixed lens

V5411-A8004SX	Analog minidome camera, 2-axis, Indoor, 1/3 inch CCD, Electronic day/night, 700TVL, NTSC, 12VDC/24VAC, Surface mount, 8mm fixed lens
V5411-A8014SX	Analog minidome camera, 2-axis, Indoor, 1/3 inch CCD, Electronic day/night, 700TVL, PAL, 12VDC/24VAC, Surface mount, 8mm fixed lens

2. MAIN FEATURES

- 1/3" SONY Exview HAD II CCD sensor
- Resolution: 700TVL
- Electronic day/night functionality
- Compact structure, elegant design, easy to install
- OSD menu in multiple languages
- 2D digital noise reduction, high S/N ratio, clear image
- Highlight Compensation (HLC)
- Motion detection
- Privacy mask
- Auto Electronic Shutter (AES), Auto Gain Control (AGC), Backlight Compensation (BLC)
- Multiple white balance modes and superior color rendering ability
- CCD blemish compensation
- Mirror, Hue, and Color Gain adjustable
- 12VDC/24VAC power supply, centralized power supply supported
- Internal / Line Lock Sync. System

3. INSTALLATION

3.1 Mounting Process

STEP 1: Secure Dome's Adapter in the desired ceiling position with the 3 fixed screws as shown in Figure 1.

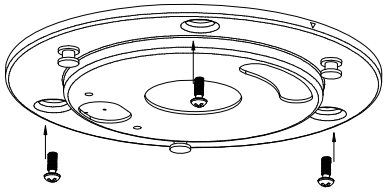
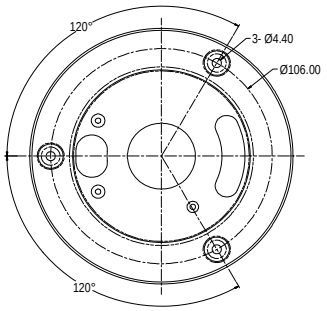


Figure 1

The adapter mounting holes are as shown in Figure 2:



(Unit: mm)

Figure 2

STEP 2: Remove the Dome Cover. Align the 3 grooves of the camera unit with the 3 bolts in the adapter and turn counterclockwise to tighten it.

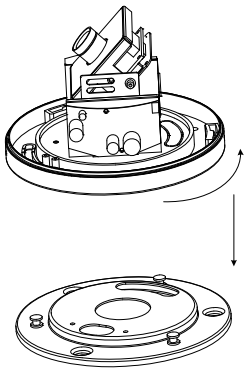


Figure 3

Notes: The minidome camera supports sync system of INT/L.L., which can be set by the DIP switch on the back panel of the minidome camera.

STEP 3: The vertical angle can be adjusted by loosening the screws as shown in Figure 4 and by turning the Camera Case vertically.

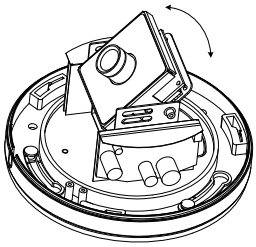


Figure 4

STEP 4: The horizontal angle can be adjusted by turning the Camera Case and

bracket in Figure 5 and by turning the Camera Platform horizontally.

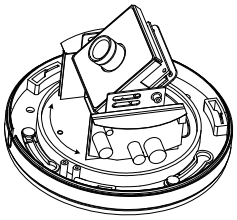


Figure 5

STEP 5: Then you can adjust the parameters in the OSD menu to set the desired video quality according to your surveillance requirements. The detailed instructions are specified in Chapter IV.

STEP 6: Place the Dome bubble over the Camera and tighten it by turning it to the right. In this process, the shielding cover may block the camera. User can adjust the position of shielding cover by turning the bubble. With the shielding cover at the proper position, the installation is finished. (Note: if 2.8mm fixed lens is built-in, the shielding cover is not utilized.)

Dimensions: (Unit: mm)

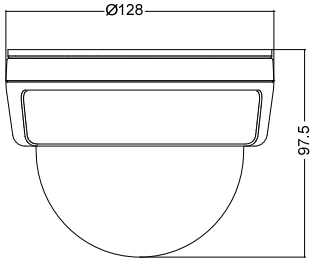


Figure 6

3.2 Handling Precautions

1. Never let liquid of any kind flow into this unit.
2. Do not directly touch the CCD element. If it is necessary to clean the element, use a soft cloth moistened with alcohol to wipe off the dust.
3. If any abnormality occurs, make sure to unplug the unit and contact your local dealer.
4. This camera possesses AGC circuit. Therefore, when the camera is used under lower luminance, the sensitivity will strengthen automatically and make the image very rough in vision. It is normal.
5. When the camera is used in ATW mode, due to the working principle of automatic tracking white balance, the recorded color is slightly different from the real color. It is normal.
6. If the subject is with high luminance (like lamp), vertical stripes will occur on the monitor (tailing shadow) or the surrounding image becomes vague (flowering). It is special phenomenon of CCD, not error.
7. The power for this camera is 12VDC or 24VAC. Also, it supports centralized power supply.

3.3 Installation Precautions

1. Do not drop the unit or subject it to strong knock.
2. Do not point the camera lens toward the sun or other strong light.
3. Do not install the camera in environment with temperature beyond the acceptable range (from -10°C to 50°C), or with high humidity, direct rainfall, frequent vibrations and shocks.

4. MENU SETTINGS

Menu		Submenu	
LENS	AUTO ↵	TYPE	DC, VIDEO
		MODE	AUTO/OPEN/CLOSE
		SPEED	000~255
	MANUAL		
SHUTTER/AGC	AUTO↵	HIGH LUMINANCE	
		MODE	AUTO IRIS / SHUT+AUTO IRIS
		BRIGHTNESS	000~255
		LOW LUMINANCE	
		MODE	AGC/ OFF
		BRIGHTNESS	×0.25, ×0.50, ×0.75, ×1.00
	MANUAL↵	MODE	SHUT +AGC
		SHUT	PAL: 1/50~1/100,000; NTSC: 1/60~1/100,000
		AGC	0.00~42.00 (8-level)
PICT ADJUST	↵	MIRROR	OFF/ON
		BRIGHTNESS	000~255 (Default: 000)
		CONTRAST	000~255 (Default: 128)
		SHARPNESS	000~255 (Default: 048)
		HUE	000~255 (Default: 128)
		GAIN	000~255 (Default: 128)
WHITE BAL	ATW↵	SPEED	000~255
		DELAY CNT	000~255
		ATW FRAME	×0.50~×2.00 (4-level)
		ENVIRONMENT	INDOOR/OUTDOOR
	PUSH		
	USER 1↵	B-GAIN	000~255
		R-GAIN	000~255
	USER 2↵	B-GAIN	000~255
		R-GAIN	000~255
	ANTI-CR		
	MANUAL↵	LEVEL	

Menu		Submenu	
	PUSH LOCK		
NR	↵	NR MODE	Y/C, OFF, Y, C
CAMERA ID	ON↵		
	OFF		
LANGUAGE	CHINESE/ ENGLISH/ JAPANESE		
BACKLIGHT	OFF		
	BLC		
	HLC		
MOTION DET	OFF		
	ON↵	DETECT SENSE	000~127
		BLOCK DISP	OFF/ON/ENABLE↵
		MONITOR AREA	OFF/ON
		AREA SEL	1/4~4/4
		TOP	PAL: 000~288; NTSC: 000~244
		BOTTOM	PAL: 000~288; NTSC: 000~244
		LEFT	PAL: 000~468; NTSC: 000~474
		RIGHT	PAL: 000~468; NTSC: 000~474
PRIVACY	ON↵	AREA SEL	1/4~4/4
		TOP	PAL: 000~288; NTSC: 000~244
		BOTTOM	PAL: 000~288; NTSC: 000~244
		LEFT	PAL: 000~468; NTSC: 000~474
		RIGHT	PAL: 000~468; NTSC: 000~474
		COLOR	1~8
		TRANSP	0.00-1.00 (4-level)
		MOSAIC	OFF/ON

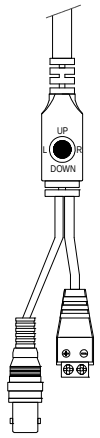
Menu		Submenu	
ATR	OFF		
	ON	LUMINANCE	LOW/MID/HIGH
		CONTRAST	LOW/MID LOW/ MID/ MID HIGH/HIGH
SYNC	INT		
DAY/NIGHT	COLOR		
	AUTO↵	IMPULSE	OFF/ON
		DELAY CNT	000~255
		DAY→ NIGHT	000~255
		NIGHT→ DAY	000~255
	B/W↵	IMPULSE	OFF/ON
CAMERA RESET			

Camera Menu

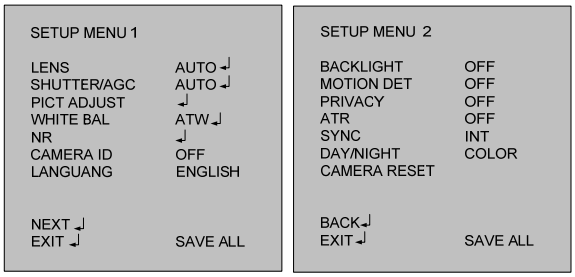
Notes: Sync system can be set to INT or LL by the DIP switch on the back panel of the camera module. It can be enabled or disabled to display in the menu, but not adjusted.

Menu setting

Five-way switch is used to control the camera menu. The switch is on the camera cable, as shown in the figure below:



1. Press the button, and the MAIN MENU will appear.

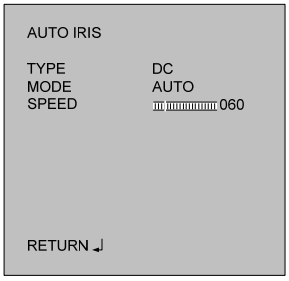


2. Press the button UP/DOWN to move through the items or LEFT/RIGHT to change the selected item's value.

3. If "↵" is available in an item's value, press the OSD button to enter the submenu and repeat the previous operations to set it. Select "RETURN↵" to get back to the previous menu.
4. Select NEXT in the SETUP MENU 1 and press the OSD button to enter the SETUP MENU 2; select BACK in the SETUP MENU 2 and press the OSD button to get back to the SETUP MENU 1.
5. Select Exit and press the OSD button to exit the menu.
6. Save All: save all the parameter settings. After all parameters settings are finished properly, please press "Save All" to save all settings and exit the menu. This operation ensures all camera parameters kept unchanged in case of power disconnection.
7. Once the intervals of the operation to OSD menu reach 1 minute, the OSD menu will disappear.
8. Blemish compensation is available. Without menu display, press and hold down the UP/DOWN button to enable the blemish compensation function.
9. To save the modified items, you have to click SAVE ALL before power-off; otherwise, the settings will be restored to the previous status after the power is back; also, you have to click SAVE ALL in case of resetting.

4.1 LENS

Function: to set lens type.
Options: Auto ↵, Manual.
1) Auto ↵: Auto iris lens. If selected, parameters including type, mode and speed of auto iris can be set.

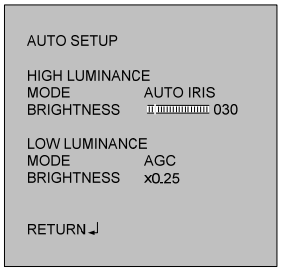


Type: to display the lens drive type. Options: DC/VIDEO. DC means direct current driven auto iris; VIDEO means video driven lens.
Notes: The built-in lens is DC driven. Please do not set the type to VIDEO.
Mode: AUTO, OPEN, CLOSE.
Speed: 000~255.
Notes: Users can adjust the iris speed for a camera, as an improper speed may cause the video too bright or dark.

2) Manual: Manual iris lens.

4.2 SHUTTER/AGC

Function: to set the shutter/AGC parameters.
Options: Auto↵, Manual↵.
1) Auto↵: if set to Auto↵, enter the submenu, as shown in the figure below:



High Luminance

Mode: AUTO IRIS, SHUT+AUTO IRIS;

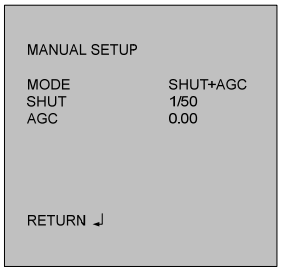
Brightness: 000~255.

Low Luminance

Mode: AGC, OFF;

Brightness: ×0.25, ×0.50, ×0.75, ×1.00.

2) Manual↵: if set to Manual↵, enter the submenu, as shown in the figure below:



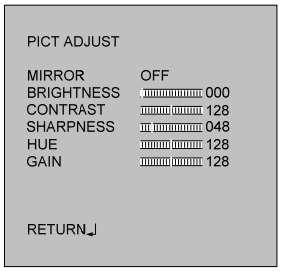
Mode: SHUT+AGC;

Shutter: 1/50s~1/100,000s (PAL), 8-level adjustable; 1/60s~1/100,000s (NTSC), 8-level adjustable. The shutter speed gets faster with the decrease of value, while the exposure time gets shorter and the video becomes darker. On the contrary, the shutter speed gets slower with the increase of value, while the exposure time gets longer and the video becomes brighter.

AGC: 0.00~42.00, 8-level adjustable.

4.3 PICTURE ADJUSTMENT

Press the OSD button to enter the submenu, as shown in the figure below:



4.3.1 MIRROR

Function: to set the image mirror function.

Options: OFF/ON. Default as: OFF.

If enabled, horizontal mirror can be realized.

4.3.2 BRIGHTNESS

Function: to adjust the brightness.

Options: 000-255. The video becomes brighter as the brightness level goes up.

4.3.3 CONTRAST

Function: to adjust the contrast.

Options: 000~255.

4.3.4 SHAPRNESS

Function: to adjust the sharpness.

Options: 000~255. The image becomes clearer along with the increase of sharpness level.

4.3.5 HUE

Function: to adjust the hue.

Options: 000~255.

4.3.6 GAIN

Function: to adjust the color gain.

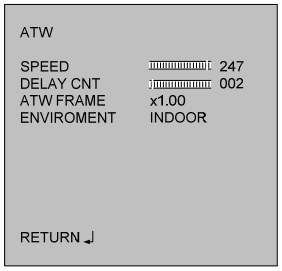
Options: 000~255. The color becomes deeper with the increase of gain level.

4.4 WHITE BALANCE

Function: to set white balance mode to compensate color temperature, further rendering the true color of object.

Options: ATW↵, USER 1↵, USER 2↵, ANTI CR, MANUAL↵, PUSH LOCK.

1) ATW↵: Auto Tracking White Balance mode. The built-in sensor can perceive the current color temperature and automatically process the images with specific arithmetic, so as to render the true color of objects. Press the OSD button to enter the submenu, as shown in the figure below:



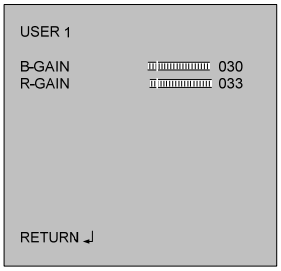
Speed: 000~255.

Delay Count: 000~255.

ATW Frame: ×0.50, ×1.00, ×1.50, ×2.00.

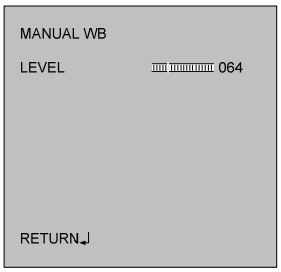
Environment: Indoor/Outdoor.

2) USER 1↵



B-GAIN: to adjust the blue gain. Options: 000~255.
R-GAIN: to adjust the red gain. Options: 000~255.
Notes: Settings under USER 2 is similar to that of USER 1.

3) MANUAL↵
Manual WB can effectively help render the true color of images when auto WB fails to do so.



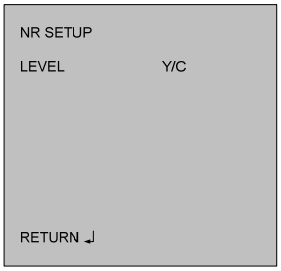
LEVEL: press the L/R button to adjust the level.

4) PUSH LOCK: press the OSD button to lock white balance.

5) ANTI CR: to enable the ANTI CR function.

4.5 NR

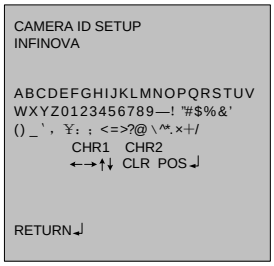
Press the OSD button to enter the submenu, as shown in the figure below:



Function: to set the noise reduction mode.
Options: Y, C, Y/C, OFF. Y indicates the brightness signal and C indicates the chroma signal.

4.6 CAMERA ID

Function: to enable/disable camera ID display.
Options: OFF/ON↵. Default as: OFF.
If set to ON↵, users can enter the submenu to set the camera ID and the display position.



Camera ID setup: the camera title is displayed in two lines, with a maximum of 26 characters displayed in each line.
Character Edit Area: the camera ID allows A~Z, 0~9 and other 28 special characters, as shown in the figure above.
CHR1/CHR2: character library 1/2.
←→ ↑ ↓ : to move the identification code cursor;
CLR: to clear the currently selected characters;
POS↵: to adjust the display position of camera ID.

How to set the camera ID?
1. Enter the camera ID setup interface, move the cursor to "←→↑↓" by pushing the button UP/DOWN, get the cursor to move among the identification codes via "←→↑↓", and select the character required to be modified or set. The cursor will be located on the first character as defaulted.
2. Move the cursor to character editing area by pushing the button UP/DOWN, select character by pushing the button LEFT/RIGHT and press the OSD button to confirm. Then, the selected character will be displayed in the specified position.
3. Repeat step 1 and 2 to modify or set other characters.
To clear characters, just select "CLR" with the direction keys and press the OSD button to confirm.
At last, select "POS↵" with the direction keys and enter the setting interface to adjust the camera ID display position on the screen. Then, press the OSD button to exit the interface.

4.7 LANGUAGE

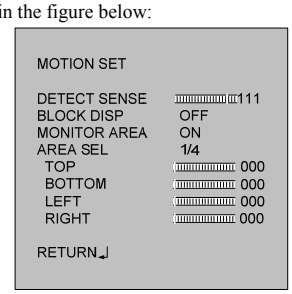
Function: to set the language for OSD menu.
Options: CHINESE, ENGLISH, JAPANESE, DEUTSCH, FRANCAIS, PYCCKNN, PORTUGUES, ESPANOL.
Notes: The language is default as ENGLISH.

4.8 BACKLIGHT

Function: to set the BLC/HLC function.
Options: OFF, BLC, HLC. BLC provides necessary light level compensation for the subject in the foreground when there is a bright light source in the background. HLC blocks the strong spots of light and compensates for the dark area as needed, thus allowing the object to be easily viewed.

4.9 MOTION DETECTION

Function: to enable/disable motion detection function.
Options: OFF/ON↵. If set to "ON↵", press the OSD button to enter the submenu, as shown in the figure below:

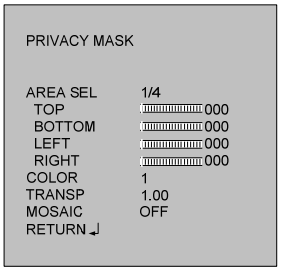


Detect Sensitivity: 000~127.
Block Display: OFF/ON/ENABLE↵. If ENABLE↵ is selected, press the OSD button and you can set the block display area with the directional buttons.
Monitor Area: ON/OFF.
Area Select: to select the motion detection areas.
Options: 1/4~4/4. The camera supports up to 4 areas which can be enabled or disabled separately via mode setting.
The coordinates (TOP/BOTTOM/LEFT/RIGHT) determine an area. Users can adjust the TOP/BOTTOM coordinate value to 000~288/000~244 (PAL/NTSC) and the LEFT/RIGHT coordinate value to 000~468/000~474 (PAL/NTSC).

Notes: The value of LEFT coordinate should be less than that of RIGHT, and TOP less than BOTTOM. The origin of coordinate lies in the upper-left corner of screen.

4.10 PRIVACY MASK

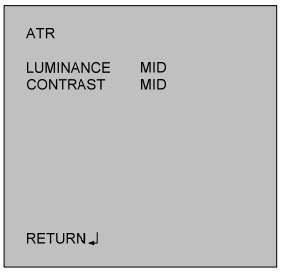
Function: to enable/disable privacy mask function.
Options: OFF/ON↵. If set to "ON↵", press the OSD button to enter the submenu. The area size, color and transparency of each area can be set independently.



Area Select: 1/4~4/4. A maximum of 4 spherical privacy zones are allowed.
The coordinates (TOP/BOTTOM/LEFT/RIGHT) determine an area. Users can adjust the TOP/BOTTOM coordinate value to 000~288/000~244 (PAL/NTSC) and the LEFT/RIGHT coordinate value to 000~468/000~474 (PAL/NTSC).
Color: Red, Green, Blue, Yellow, Cyan, Magenta, White, Black.
Transparency: 0.00, 0.50, 0.75, 1.00.
Mosaic: ON/OFF.

4.11 ATR

Function: to enable/disable ATR (Adaptive Tone Reproduction).
Options: ON↵/OFF. Defaulted as: OFF.
If set to "ON↵", the brightness of videos can be automatically adjusted. For dark area, properly enhance the luminance; for bright area, properly reduce the luminance. Enter the submenu to set the luminance and contrast, as shown in the figure below:



Luminance: LOW/MID/HIGH.
Contrast: Low/MID LOW/MID/MID HIGH/HIGH.

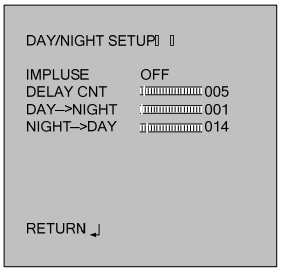
4.12 SYNC MODE

Function: to set the synchronization mode for the camera.
Notes: The sync mode can be set via the DIP switch on the back panel of the camera.

4.13 DAY/NIGHT

Function: switch over B/W and Color mode; predefine the threshold illumination values and lag time for day/night switching.
Options: Auto↵, Color, B/W↵. Default as: Color.
1) Color: the video is displayed in color mode.

2) Auto↵: to automatically switch B/W and Color mode as per the light conditions. Enter the submenu, as shown in the figure below:



IMPULSE: ON/OFF. Impulse is available for black and white image if set to ON and unavailable if set to OFF.
DELAY CNT: delay time for day/night switch.
DAY—>NIGHT: to set the switchover threshold value from Color to B/W mode.
The larger the value is, the lower the illumination value for day/night switching is. Options: 000~255.
NIGHT—>DAY: to set the switchover threshold value from B/W mode to Color mode. The smaller the value is, the larger the illumination value for day/night switching. Options: 000~255.

3) B/W↵: the video is displayed in black and white. Users can enter the submenu to set the burst, referring to the settings under Auto↵ mode.

4.14 CAMERA RESET

Function: to resume the factory default settings.

APPENDIX I SPECIFICATIONS

Model	V5411-A8 series
Image Sensor	1/3" SONY Exview HAD II CCD
Video System	NTSC/PAL
Effective Pixels (H × V)	NTSC: 976×494, 480K; PAL: 976×582, 570K
Scanning System	2:1 interlace scanning
Resolution	700 TVL
Day/Night Functionality	ICR
Sensitivity	0.01 lux @ F1.2 (50 IRE, AGC HIGH)
S/N Ratio	>54 dB (AGC OFF)
Lens	F2.0, f=2.8mm, 3.6mm or 8mm
Camera Angle Adjustment	X (Panning): 0°~360°; Y (Tilting): 0°~85°
Auto Electronic Shutter	Auto; Manual: NTSC: 1/60~1/100,000s, PAL: 1/50~1/100,000s
Gamma Correction	0.45
White Balance	ATW/PUSH/USER 1/USER 2/ ANTI-CR/ MANU/PUSH LOCK
Color Temperature Range	1800K~10500K
Auto Gain Control	Available, 0~42dB (8-level adjustable)
BLC/HLC	Available
Privacy Mask	4
Motion Detection	4
Video Effects	Horizontal Mirror, Brightness, Contrast, Sharpness, Hue, Gain adjustable
Noise Reduction	2D
Sync. System	Internal/ Line Lock
Video Output	1.0 Vp-p (75 Ohm), BNC connector

Power Supply	12VDC/24VAC
Power Consumption	4 W (maximum)
Operating Temperature	14° F ~ 122° F (-10° C ~ 50° C)
Storage Temperature	-4° F ~ 140° F (-20° C ~ 60° C)
Operating Humidity	0~90% RH (non-condensing)
Unit Dimensions (H×Ø)	3.84"×5.04" (97.5 mm×128 mm)
Box Dimensions (L×W×H)	5.51"×5.51"×4.72" (140 mm×140 mm×120 mm)
Unit Weight	0.60 lbs. (0.27 kg)
Shipping Weight	1.04 lbs. (0.47 kg)

Specifications and appearance are subject to change without notice.

APPENDIX II CABLE DIAMETER CALCULATION AND LIGHTNING & SURGE PROTECTION

Relation between 24VAC Cable Diameter and Transmission Distance

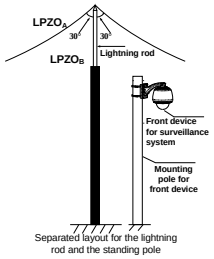
In general, the maximum allowable voltage loss rate is 10% for AC-powered devices. The table below shows the relationship between transmission power and maximum transmission distance under a certain specified cable diameter, on condition that the 24VAC voltage loss rate is below 10%. According to the table, if a device rated at 50W is installed 17-meter away from the transformer, the minimum cable diameter shall be 0.8000mm. A lower diameter value tends to cause voltage loss and even system instability.

Diameter (mm) / Distance (ft / m) / Power (W)	0.8000	1.000	1.250	2.000
10	283 (86)	451 (137)	716 (218)	1811 (551)
20	141 (42)	225 (68)	358 (109)	905 (275)
30	94 (28)	150 (45)	238 (72)	603 (183)
40	70 (21)	112 (34)	179 (54)	452 (137)
50	56 (17)	90 (27)	143 (43)	362 (110)
60	47 (14)	75 (22)	119(36)	301 (91)
70	40 (12)	64 (19)	102 (31)	258 (78)
80	35 (10)	56 (17)	89 (27)	226 (68)
90	31 (9)	50 (15)	79 (24)	201 (61)
100	28 (8)	45 (13)	71 (21)	181 (55)
110	25 (7)	41 (12)	65 (19)	164 (49)
120	23 (7)	37 (11)	59 (17)	150 (45)
130	21 (6)	34 (10)	55 (16)	139 (42)
140	20 (6)	32 (9)	51 (15)	129 (39)
150	18 (5)	30 (9)	47 (14)	120 (36)
160	17 (5)	28 (8)	44 (13)	113 (34)
170	16 (4)	26 (7)	42 (12)	106 (32)
180	15 (4)	25 (7)	39 (11)	100 (30)
190	14 (4)	23 (7)	37 (11)	95 (28)
200	14 (4)	22 (6)	35 (10)	90 (27)

Lightning & Surge Protection

The product adopts multi-level anti-lightning and anti-surge technology integrated with gas discharge tube, power resistor and TVS tube. The powerful lightning and surge protection barrier effectively avoids product damage caused by various pulse signals with power below 4kV, including instantaneous lightning, surge and static. However, for complicated outdoor environment, refer to instruction below for lightning and surge protection:

- The product features with dedicated earth wire, which must be firmly grounded. As for surveillance sites beyond the effective protection scope, it's necessary to erect independent lightening rods to protect the security devices. It's recommended to separate the lightning rod from the mounting pole, placing the rod on an independent pole, as shown in the figure below. If the product has to be installed on the same pole or pedestal for lightning rod, there should be strict insulation between the video cable BNC terminal, power cable, control cable and the standing pole of the lightning rod.
- For suburb and rural areas, it's recommended to adopt direct burial for the transmission cables. Overhead wiring is prohibited, because it's more likely to encounter lightning strike. Use shielded cables or thread the cables through metal tubes for burial, thus to ensure the electric connection to the metal tube. In case it's difficult to thread the cable through the tube all the way, it's acceptable to use tube-threaded cables only at both ends of the transmission line, yet the length in burial should be no less than 15 meters. The cable sheath and the tube should be connected to the lightning -proof grounding device.
- Additional high-power lightning-proof equipment and lightning rods should be installed for strong thunderstorm or high induced voltage areas (such as high-voltage substation).
- The lightning protection and grounding for outdoor devices and wires should be designed in line with the actual protection requirement, national standards and industrial standards.
- The system should perform equipotential grounding by streaming, shielding, clamping and earthing. The grounding device must meet anti-interference and electric safety requirements. There should be no short-circuiting or hybrid junction between the device and the strong grid. Make sure there's a reliable grounding system, with grounding resistance below 4Ω (below 10Ω for high soil resistivity regions). The cross-sectional area of the earthing conductor should be no less than 25mm².



Separated layout for the lightning rod and the standing pole

Infinova

51 Stouts Lane,
Monmouth Junction, NJ 08852, U.S.A.
Tel: 1-888-685-2002 (USA only)
1-732-355-9100
Fax: 1-732-355-9101
sales@infinova.com

V1.1 1408